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(54) **SUPERJUNCTION SEMICONDUCTOR ELEMENT AND MANUFACTURE THEREOF** COPYRIGHT: (C)2001,JPO

(57) Abstract:

PROBLEM TO BE SOLVED: To elevate breakdown strength, in a superjunction semiconductor element which is equipped with a drift layer, consisting of parallel pn layers letting current flow in on conditions and also being depleted in off conditions.

SOLUTION: This superjunction semiconductor element is provided with an n high-resistance region 20, around a drift layer 12 consisting of parallel pn layers composed of n drift regions 12a and p partition regions 12b, and concentration ND of the impurities in the high-resistance region 20 is set at $5.62 \times 10^{17} \times \text{VDSS}^{-1.36} \text{ (cm}^{-3}\text{)}$ or lower. But, VDSS shows breakdown strength (V). Furthermore, an n-channel stopper region adjacent to the high-resistance region 20 is arranged.

